Napa-Sonoma Marsh Restoration Group
Meeting Agenda
December 7, 2017 9:30am – 1:00pm
USGS San Francisco Bay Estuary Field Station
Azuar Dr., Building 505, Vallejo, CA 94592

Note: We are grateful to Liz Duffy of the San Francisco Bay Joint Venture for sharing her notes with the entire NSMRG.

Welcome and Introductions *9:30-9:40*
Karen Taylor, CA Department Fish and Wildlife

Attendees: Susanne Von Rosenberg (GAIA Consulting), Karen Taylor (CDFW), Larry Wyckoff (CDFW), Heather Hlusak (CDFW), Don Brubaker (USFWS Don Edwards NWR), Cheryl Strong (USFWS Don Edwards NWR), Isa Woo (USGS), Renee Spenst (DU), Francesca Demgen (AECOM), Russ Lowgren (DU), Liz Duffy (SFBJV), NOAA fellow (missed his name), Pat Mapelli (Granite Rock), Tanya Graham (USGS), Susan De La Cruz (USGS), Jessica Davenport (SCC), Laura Cholodenko (SCC), Ric Notini (Cargill), Connie Lee (Cargill), Julian Meisler (Sonoma Land Trust), Kristin Tremain Davis (AECOM), Barry Christian (Citizen Advocate), Alex Braud (BCDC)

Sears Point Update *9:40 – 10:00 (20 min)*
Don Brubaker, San Pablo Bay National Wildlife Refuge

Update on October 8-9, 2017, Highway 37 fire (included lots of great photo documentation): The fire burned hundreds of acres, **222 acres of which were in the NWR on the Sears Point Unit.** They think the fires jumped back and forth across Hwy 37 a number of times before the winds moved the fire NW; still unsure of the cause. The fire's movement was likely slowed due to cattle grazing keeping fuel at a minimum. And this fire would likely have been smaller except fire-fighting resources were co-opted to other more critical fires.

Fire fighters performed a controlled burn around the Refuge buildings which saved most of the Refuge assets. Damage included fence posts burned (wooden posts will be replaced with steel), burned gates needing replacement. Local cattle were saved by escaping into the neighboring winery (thanks to the winery folks which cut open the fencing between their properties)

Fires will happen here again, and perhaps with more frequency: Sonoma Land Trust has done a fire map showing that fire footprints have been similar over the past several decades (which is true all over Northern CA; Tubbs fire followed almost the same route exactly as 1964).

Recovery:
The NWR has been awarded money for recovery, much of which will go towards herbicide to limit invasive weeds during vegetation regrowth. Vegetation is recovering for the most part except in some areas where seed bases were burned badly (and the fire was still smoldering for a while after most of the fire was out). Vegetation recovery has been especially rapid in the controlled burn area. Currently, that burned out area looks indistinguishable from unburned areas (showed recent photo).

Wildlife responded quickly: birds (shorebirds, curlews, ring-billed gulls, owls) and cattle moved in while things were still smoldering to forage on seeds, etc. This is very common for grassland burns.

STRAW projects have been particularly helpful with recovery. They have had a number of them in many areas, amounting to hundreds of students helping to weed and plant rhizomatous grasses.

Julian Meisler asked about any observed impacts of recent King Tides.
Don said they have noticed increased sediment deposition, including around 2 mm at Cullinan.
Julian said they have LIDAR data showing good accretion levels and colonization by Spartina and pickleweed.

Hunting Update:
There is a submitted proposal expected to open up parts of the Refuge to waterbird hunting. Specifically, they are planning to open 800 acres of Dixon Unit and 600-800 acres at Cullinan (West Cullinan, the portion of Cullinan Ranch that has already been breached) to hunting (with buffer areas). All hunting must be done from open water.

Highway 37 Status Update/Highway 37-Baylands Group

10:00 – 10:15 (15 min), Jessica Davenport, CA State Coastal Conservancy

Highway 37 Baylands Group Overview: this group was formed in June 2017 initiated by Sonoma Land Trust and the SR 37 Policy Committee (local officials); impetus was 2016-2017 floods when road was closed for weeks.
Who We Are: North Bay wetland land managers, ecological restoration practitioners, congestion management agencies (local/regional transportation authorities), other stakeholders. Highway 37 is a CalTrans (State) road, but rebuilding it is not a priority (slated for around 2088 on their agenda). So, locals are working with the MTC to try to rebuild the road sooner. Explored privatizing road (unpopular), public-private partnerships, and other options. Most likely plan is making Highway 37 a toll road.
SCC is coordinating the SR 37 Baylands Group and sees road rebuilding, done correctly, as consistent with the Bayland Goals and restoration plans for the area. SCC is trying to get partners on board with their vision to: ***Integrate, Don't Mitigate***.
Bayland Goal: Elevate SR 37 to allow full passage of sediment, water, and wildlife.
Showed a map showing SR 37 with existing and planned restorations, and other useful SFEI maps.

Timeline:
Summer 2017: developed a white paper and comments on the Draft Corridor Plan
Fall 2017 – Spring 2018: "Resilient 37" workshop series to develop a Design Alternatives Assessment (DAA)

Expected Outcomes: 1) improved design alternatives for CEQA, and 2) preliminary landscape vision.
Key technical questions address design incorporating sea-level rise and future changes. SFEI helped with historical maps to show landscape and road development over time. CalTrans is also conducting a survey on bike lane segments.
Kristin Tremain Davis (AECOM) has been/will be contacting people about this project.
June 2018: Regional Measure 3 on ballot would raise tolls on all highways and generate $110 million for Hwy 37 that could be used towards rebuilding, focusing on near-term fixes, while full rebuilding will likely take decades (on state's timeline)

Julian urged DU and CDFW folks working in this area to give input on designs so that the restoration and public access concerns are being heeded.
Don and **Larry** said that CDFW and USFWS can't (politically) get involved in the design but will give input on biological, etc., concerns.
Consensus seems to be to encourage a causeway style (elevated) road vs. building flood berms; must consider natural sedimentation patterns.

Skaggs and Cullinan Update *10:15 – 10:35 (20 min)*

Russ Lowgren, Ducks Unlimited

Cullinan Update: Breached majority of site in 2015, reserved **East Cullinan** as beneficial reuse area; ~3 million cubic yards (CY) capacity (300 acres subdivided into 5 cells; islands and channels constructed within cells; channel (reservoir) used to drain cells and keep cells wet (requirement of permit), will eventually be breached.
2017 construction: all 5 cells are fully contained and they installed a tidal intake structure with a 2-way fish screen (solar-powered, self-cleaning). They put in cell to cell structures and brought in about 800,000 CY of sediment to cells total so far (450,000 CY to cells 4 and 5 in 2017). LindMarine & Kurt Maritime are contractors (through Army Corps) for bringing in dredged material through channel outside cells 4 and 5 (constraint is the tricky currents there now that West Cullinan was breached).
Dredging has been done at future breach site from Dutchman Slough to East Cullinan (Guadalcanal is immediately to the east with a planned breach to connect to East Cullinan in the future).
Permitted elevation is 5.5 feet NAVD, though USFWS would like it to be higher. East Cullinan is not part of the future hunting area.

Elevation - issues to consider:

- with too much sediment deposition, there can be subsidence, especially with thin layer deposition (like at Hamilton); also, with a higher elevation, you can encounter issues of land drying out and methyl-mercury generation; a higher elevation can also slow channel formation
- lower elevation restorations may help to accelerate channel formation, but may be insufficient to handle sea-level rise (SLR)

Skaggs update:
Challenges:

- **Subsidence & SLR**: They need 50-70 million CY to bring it up to current sea-level
- **Complex infrastructure**: over 12 miles of levees, 3 bridges, boat launch, Hwy 37, a VORTAC beacon ("visual, omni, radio, traffic, air control" navigational beacon that 97 airports use)
- **Haire Ranch**: 1,100 acre parcel, with NRCS Easement and obligation to restore 550 acres to wetlands by 2018.

Status:

- Current work is focused on the design for a seasonal wetland/subsidence reversal unit on the Haire Ranch. Current design includes a deep water unit and requires constructing a deep water levee with a divider levee across the southern portion. Fresh to brackish water is pumped to the deep water area from the numerous drainage channels on the site. Flow occurs only after the soils at the site are saturated (typically January or later). Water is impounded in the deep water unit, and then pumped through channels into the seasonal wetlands/subsidence reversal unit in the slough to help restore wetlands there. Still need to address issues with water quality, recirculating water, mosquitos, etc.

- Busy in construction phase. They had a late start (October/November 2017) so won't be finishing this year.

Expected Timeline:
Skaggs Island: preliminary design - 2018. Environmental planning & permitting - 2018 & 2019.
Haire Ranch restoration: should be completed Fall 2018.

Ponds 6-8 Project Summary *10:35 – 10:50 (15 min)*

US Army Corps of Engineers [Invited – none attended; Susanne Von Rosenberg, GAIA]

Update from Susanne: from Corps' perspective, the construction work on the project is done, though there is a significant breach at Pond 6A around the larger of the 2 water control structures that had been put in (failed in January 2017 floods). Needs to be fixed so it can stay a managed pond. As for repair, Corp is still in initial design phase and is considering alternatives given the strong tides there that threaten to wash out any placed sediment.

Mixing Chamber Update *10:50 – 11:10 (20 min)*

Susanne von Rosenberg, GAIA Consulting, Inc.

Pond 7/7A Mixing Chamber:
Purpose: to completely mix high salinity bittern with ambient water (and recycled water when available) to discharge water with salinity ≤ 3 ppt higher than ambient. However, the proposed process developed during the design is not working. All water flows and discharge are tidally-driven. Outflow canal is 0.7 miles long before it discharges.
Many Challenges: severe operating conditions; biofouling of flowmeters with tubeworms (Australian) and bryozoans, etc.; erosion/sedimentation; automated system performance failures; siphon to Pond 8 is too small and is restricting flow; mixing chamber is not emptying as much as modeled; air bubbler system is costly and subject to mechanical issues; remaining issues with integration of recycled water flow management between project and SCVWD.
Lessons learned: flow meters are not reliable/workable, other problems. **Need to simplify** the operations. Also, tube worms are hard to kill (not even full immersion in bittern for 2 weeks, or in bleach, were fully lethal… only ~60% with pure bittern, less with bleach)

Questions they are addressing:
- Is fixed-flow discharge from Pond 7 possible?
- How does the system handle variable recycled water flows?

Field-testing has been ongoing. Fully open gate leads to high salinity spikes that are not workable. 25% open gate gets much closer to limits. Trials for 15% open are in the works, can't go less open than that (15% = gate is open ~ 1 inch) or gate plugs with sediment right away. Max recycled water flow only increased water level by 2 inches. Recycled water is almost purely fresh – 0.7 ppt.

Outcome: Need to update process/bittern removal estimates, request **permit modification**.
In the meantime, things are slowly getting better: brine shrimp are swimming in Pond 7, eared grebes are foraging there.

NSMR and NPS Biennial Report Summary *11:10 – 11:30 (20 min)*

Karen Taylor, CA Department Fish and Wildlife

Napa Sonoma Salt Marsh project and **Napa Plant Site Restoration** project updates:
- Rail Surveys, Water Quality, and Sedimentation

Rail Surveys: Sufficient rail habitat has not yet fully developed inside restoration sites.

- All rail detections were in accreted margins of marshes, none inside the ponds yet
- Increased detections starting in 2015, 2016 & 2017 had detections in 3 locations

Water Quality: Salinity varies by pond and from year to year, ranging from almost fully fresh (<5 ppt) to almost 30 ppt

Sedimentation plates & Erosion pins:

- Napa Plant site: sedimentation plates only; mostly accreting, one fluctuating; within the ponds, there are varying spatial patterns of eroding, accreting, maintaining…
- Visually, pictures show huge improvements since breaches in the various ponds

Outcome:
Expect Final 2017 Biennial Report in Spring 2018

Timelines:
Monitoring has been going on for 10 years at Napa-Sonoma Marshes; another 5 years to go
Napa Plant site has 10 years total monitoring

Break *11:30 – 11:45 (15 min)*

2017 California Least Tern & Western Snowy Plover Summary

11:45 – 12:00 (15 min), Karen Taylor, CA Department Fish and Wildlife

Least Terns (LETE):
Ponds 7/7A:

- Nesting on and off since 2009, were using levee top and salt crust habitat.
- 2017 – only 3 nests, none successful.
- Predators: ravens, otters, peregrine falcon, gulls, American pelican, geese.

Napa Plant Site:

- Main Island is a favorite nesting site for LETE.
- 2017 was banner year in terms of nesting, eggs, hatching, but only moderate, maybe slightly above average success rate (60%), likely due to high predation event in mid-July

Snowy Plovers:

- Nesting activity seen at Ponds 7/7A, Napa Plant Site, Wingo East.
- Most active nesting years during active construction…construction maybe keeps predators away?
- Cooler, wet years had lower success (2011), success slightly better in drought years. Similar trends to LETE.
- Predators: recent increase in otters on exposed areas; ravens, etc. Ravens, some other birds are new to the area since restoration, habitat is still changing, and predators are learning…

High/Low-tide Waterbird Use of the Cullinan Ranch Area

12:00 – 12:20 (20 min), Susan De La Cruz, USGS

Cullinan Ranch monitoring: This is the start of the 3rd year of monitoring distribution and abundance of birds using Cullinan Ranch. Just started monitoring water quality.
Methods: 2016-2018, Fall (Nov), Winter (Jan-Feb), Spring (April); High and Low tide surveys

Water level: High tides are similar to nearby areas (1 hour delayed from time predicted at Brazos Bridge), but low tide levels don't drop very low; never drop below 2.2' relative to sea level (though it may be getting lower).
Salinity: Ranged from ~20 ppt in Nov 2016 to 0 ppt through much of the winter of 2017
DO: good consistent levels measured in spot samples; pH was also consistent and good
Waterbird Abundance: Diving ducks are most abundant guild, Canvasback – most abundant spp., dabbling ducks are 2nd most abundant; Small shorebirds make up 2% (low tide (LT)) to 14% (HT) in abundance; other guilds are rare.

- Seasonal and annual differences between sites, tides, dabblers and divers.
- Activity differences in roosting/foraging. Dabblers were using Cullinan primarily for roosting in winter.
- Bird activity differs a lot when people are around (on weekends); they are not habituated to people – act very different than the birds in the S Bay, which are more used to people.

Pond 6 - 8 Restoration Project Monitoring Update *12:20 – 12:30 (10 min)*

Susan De La Cruz and Tanya Graham, USGS

Ponds 6-8 monitoring: managed ponds, construction wrapped up ~February 2016.
Water Quality: Temperature and salinity fluctuate seasonally, within reasonable ranges; DO, pH looking good, consistent.

- exception: Pond 7 is very salty, gets warm, DO gets low (<2), but pH looks better now (pH drops when ponds dry out)

Trace Metals: *Nickel* fluctuates a fair bit, though it seems to be lower and more stable now; *Arsenic* fluctuates, recent rise in dissolved level… cause unknown. Levels are low enough that the reasonable potential analysis for the new permit (issued 6/2017) indicated that there was no potential for an exceedance of WQ standards. New permit does not testing for As and Ni.
Toxicity: No/minimal toxicity observed in tests on mysids and silversides, so reduced requirements for this analysis.
Delta Smelt: none found in the restoration site. Some found nearby in the Napa River (N of the restoration), and around Petaluma
Waterbirds: Trends (densities at high tide) are similar between project ponds and reference ponds; all doing more roosting than foraging.

Avian Response to the Restoration of the North Bay Salt Ponds

12:30 – 12:50 (20 min), Tanya Graham, USGS

Challenge/Question: How to maintain waterbird populations in the context of all of the tidal marsh restoration (with conversion of open water ponds to wetlands…). How has the restoration affected waterbird use of the North Bay, since the Bay Area is such a critical overwintering habitat for waterbirds?

Study: 2002-2017 analysis by bird guild (diving ducks, dabbling ducks, medium shorebirds, small shorebirds): looking at pond area, pond type (managed or breached), water quality, time since breaching, random effects (year, pond)

Results:

- Pond type: For all birds, density is higher in managed ponds than breached ponds
- Tides in breached ponds: More foraging on LT, more roosting on HT
- Age of restoration: for medium shorebirds, foraging was greater at older breached ponds
- Season: More divers in winter & spring; more dabblers and shorebirds in fall. For all birds, highest use in fall/winter versus spring.
- Pond type: waterbirds used breached ponds for foraging at LT, roosting at LT; managed ponds used most at HT

- Salinity: Lower salinity preferred almost always

Take-home message: Waterbirds are using breached ponds, but loss of shallow habitats may yield increased pressure on managed pond resources.

Other considerations: Need bathymetry and sediment deposition studies; as restoration sites mature, it is harder to count birds (due to increased vegetation densities, difficulty in accessing the full site)

Q&A Discussion *12:50 – 1:00 (10 min)*

Cheryl Strong (<cheryl_strong@fws.gov>) – South Bay Salt Ponds Update:
Phase I completed.
Restoration to date (2016):
Tidal: 1,600 acres
Muted Tidal: 1,400 acres
Reconfigured Ponds: 710 acres
Total: 3,750 acres
7 new trails, signage, piers (Eden Landing)
Birds prefer linear islands (vs round ones)

Phase II (current phase) includes:
- Ravenswood
- Alviso A1/A2W (Mountain View Ponds)
- Alviso Island Ponds (A19-21)
- Alviso A8 Ponds

Almost done with the permitting process, should be done by early 2018.
Eden Landing is about 1 year behind this timeline.

Side discussion about salt marsh harvest mouse:
In the N Bay, salt marsh harvest mouse are very different than in the S Bay. Unlike in the S Bay where they exclusively use pickleweed, N Bay mice like pickleweed but don't need it – they thrive in multiple vegetation and habitats.

Adjourn *1:00*